

## Topic: Linking and Referencing via Attributes

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### Introduction

Both EAD3 and EAC-CPF make use of attributes as a way to establish complex relationships between elements either internally by referencing individual elements or possible relationships within a given document or externally by linking to outside vocabularies or sources. However, following the revisions put forth by EAD3 and the new proposals put forth during this round of revision to EAC-CPF, a second look at how the requirements use attributes to support establishing complex relationships both internally (i.e., referencing disparate elements within a given record) and externally (i.e., linking to sources or vocabularies outside of the given record).

The following proposal outlines how both schemas currently link and reference via attributes and sets forth two proposals for how the schemas might align to support the ability to better connect elements internally and incorporate external sources.

### Internal Referencing via Attributes in EAD3 vs. EAC-CPF

In the proposal "Including Evidence-Based Assertions in Encoded Archival Standards," which responds to a community request for additional functionality to support assertions and citations in EAC-CPF (see GitHub Issue #43), Mark Custer points out the need to be able to better "use attributes to connect disparate parts of an EAC-CPF record."<sup>1</sup> Currently, internal referencing within EAC-CPF is not possible as EAC-CPF allows only one main attribute for referencing. The @xml:id allows users to establish an identifier for a given element; however, once users establish an internal identifier there are no equivalent attributes that allow users to point to (or target) those identifiers established in the document. EAC-CPF users seeking additional complexity can optionally turn to XLinking language to cite external sources, but cannot properly reference assertions or sources identified locally within the EAC-CPF record.

#### *Attributes used to establish internal references in EAC-CPF*

| Attribute | Summary  | Data Type |
|-----------|--|-----------|
| @xml:id   | Unique identifier used to name specific elements in the EAC-CPF instance | NMTOKEN   |

Like EAC-CPF, EAD3 uses the attribute @id (with the XML Namespace removed) to allow users to establish an identifier for a given element in the instance. EAD3 pairs @id with two additional attributes to allow users to reference identified elements established in the record: @target and @parent. It is important to note that these two attributes while they share the same data type (i.e., "IDREF") offer two different models for referencing identified elements.

#### *Attributes used to establish internal references in EAD3*

| Attribute | Summary  | Data Type |
|-----------|--|-----------|
| @id       | Used to name the element so that it can be referred to, or referenced from, somewhere else               | ID        |
| @parent   | On <container>, the values of the id attributes of other <container>s that hold the item being described | IDREF     |
| @target   | Used to create internal links within an XML instance   | IDREF     |

The @target attribute is available within the <ptr> and <ref> elements to link any elements across the EAD3 document. Within the <ptr> element, @target allows users to simply point to a reference using the @target attribute. On the other hand within the <ref> element, @target allows users to create internal links and provide additional descriptive details to provide additional context if so desired. For example,

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<sup>1</sup> Custer, Mark. "Including Evidence-Based Assertions in Encoded Archival Standards."  
[https://docs.google.com/document/d/1o6U9NB8QgorK64\\_U3JVn0maYDhOBlzVx-JBcaSKDWbk/edit#eading=h.e5omqjh65oso](https://docs.google.com/document/d/1o6U9NB8QgorK64_U3JVn0maYDhOBlzVx-JBcaSKDWbk/edit#eading=h.e5omqjh65oso)

the <ref> element paired with the @target attribute enables users to establish references from "one <c> to another related <c>" or "from text in a scope and content note to a description of a <c> in the content list" as explained in the tag library.<sup>2</sup>

While the @target attribute can be used in the <ref> and <ptr> to connect identified elements, the model of use set forth by the @parent attribute is more specific. The @parent attribute can be used only in the specific instance of internally linking <container> elements and <physloc> elements to express hierarchical relationships for materials hierarchically housed within other containers or within particular locations.

Both IDREF attributes (i.e., @target and @parent) provide ways to leverage the @id attribute for internal referencing in a way that is not currently supported by EAC-CPF but necessary to support enhancements like the assertion model. However, moving forward, it may be wise to decide upon one shared model for internal referencing in EAC-CPF and EAD3.

### External Linking via Attributes in EAD3 vs. EAC-CPF

The two schemas have not only diverged in their approach to such internal methods for referencing disparate elements, but increasingly they have also diverged in the use of attributes for linking externally. Initially, both EAD2002 and EAC-CPF relied upon XML XLinking Language for establishing external links. Yet in the most recent revision, EAD3 deprecated the use of XLink namespace, preserving just the XLink model by incorporating attributes @actuate, @arcrole, @href, @linkrole, @linktitle, and @show as a way to maintain the functionality of externally linking attributes but eliminate the "onerous and needless complexity that namespaces introduce when processing XML."<sup>3</sup> Even as the decision to remove the XLinking Language has been approved for EAD3, the question remains whether all of the the XLink related attributes should be required for both EAC-CPF and EAD3.

#### *Attributes used to establish external links in EAD3*

| Attribute   | Summary  | Data Type                                |
|-------------|--|--|
| @actuate    | Defines whether a rendering application should present an actionable link automatically or when requested by the user                                  | Values: none, onload, onrequest, other   |
| @arcrole    | Describes the nature of the source of a link as relative to the target of the link   | anyURI                                   |
| @entityref  | The name of a non-parsed entity declared in the declaration subset of the document that points to a machine-processable version of the cited reference | ENTITY                                   |
| @href       | The URI/URL for a remote resource in a link  | token                                    |
| @identifier | Provides a machine-processable identifier for an entity or concept in an external system   | token                                    |
| @linkrole   | A URI that characterizes the nature of the remote resource to which a linking element refers   | anyURI                                   |
| @linktitle  | Viewable caption which explains to users the part that a resource plays in a link.   | token                                    |
| @show       | Defines how a remote resource that is the target of a link will appear to a user   | Values: new, replace, embed, other, none |
| @source     | The controlled vocabulary that is the source of the term contained in the element  | token                                    |
| @xpointer   | Enables linking to specific sections of an external document that are relative   | token                                    |

<sup>2</sup> "<ref>." EAD3 Tag Library. <https://www.loc.gov/ead/EAD3taglib/EAD3.html>

<sup>3</sup> "Preface." EAD3 Tag Library. <https://www.loc.gov/ead/EAD3taglib/EAD3.html#attr-actuate>

Currently, EAC-CPF maintains support for a “limited subset of the xlink standard” as a way to “create and describe links between resources” and to “reference a richer set of relations than those supported internally by EAC-CPF.”<sup>4</sup> However, moving forward it may be desirable for EAC-CPF to similarly adopt EAD3’s model for external linking in order to support aligning the two standards and to adopt a simpler model for using schema-specific attributes for both external linking and internal referencing.

#### *Attributes used to establish external links in EAC-CPF*

| Attribute         | Summary  | Data Type  |
|-------------------|--|--|
| @vocabularySource | A value designating the source of the vocabulary from which terms are derived  | anyURI   |
| @xlink:actuate    | Used to signal intended behavior with respect to whether the remote resource link is resolved when the containing resource is rendered, or when the user requests the resource | Values: "onLoad" or "onRequest" or "other" or "none"       |
| @xlink:arcrole    | URI defining the purpose of the link   | string   |
| @xlink:href       | Contains a URI, possibly relative, pointing to the related resource  | anyURI   |
| @xlink:role       | Identifies the type or nature of the remote resource with an absolute URI  | string   |
| @xlink:show       | Used to signal intended behavior with respect to where the remote resource is to appear when the link is resolved  | Values: "embed" or "new" or "replace" or "none" or "other" |
| @xlink:title      | Information that may be used as a viewable caption for the remote resource   | string   |
| @xlink:type       | A fixed value that identifies an XLINK compliant element of a particular type  | Values: "simple"   |

#### Requirements for Enhancing Referencing/Linking Capabilities in EAC-CPF

In order to support the internal referencing required by the assertion model and come in line with EAD3’s current model for referencing, EAC-CPF will be required to remove the XML namespace from the attribute @xml:id and adopt the attributes @id and @identifier. This will help distinguish between identifiers used to create both internal references (@id) as opposed to those used to establish external sources (@identifier). Additionally, EAC-CPF will be required to either establish a @target attribute with an IDREF data type to allow for generalized referencing across disparate elements or to establish a set of dedicated target attributes that could be used to connect elements in more specific ways (in line with the @parent model). Decisions from the EAC-CPF team will in return inform how EAD3 might support internal referencing and the assertion model in the future if so desired.

On the other hand, the requirements for EAC-CPF to come in line with EAD3’s model for external linking, are more clear. EAC-CPF will minimally need to remove XLink namespace and adopt the following elements: @actuate (vs. @xlink:actuate), @arcrole (vs. @xlink:arcrole), @href (vs. @xlink:href), @linkrole (vs. @xlink:role), @linktitle (vs. @xlink:title), and @show (vs. @xlink:show) as well as deprecating the use of @xlink:type (which will become obsolete following the removal of the XLink namespace).

#### Recommendations

- Remove the XLink namespace (as already approved by the EAC-CPF sub-team) and create relevant attributes after review and confirmation of which set will be supported in the future. Consider attributes: @actuate, @arcrole, @href, @linkrole, @linktitle and @show and deprecate @xlink:type.

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<sup>4</sup> “Integrating XLink into EAC-CPF.” EAC-CPF Tag Library”

[https://eac.staatsbibliothek-berlin.de/schema/taglibrary/cpfTagLibrary2019\\_EN.html#attr-xmlid](https://eac.staatsbibliothek-berlin.de/schema/taglibrary/cpfTagLibrary2019_EN.html#attr-xmlid)

- Remove the XML namespace and incorporate relative attributes directly into the schema to align with EAD3. Create attributes: @identifier and @id.
- Create a set of dedicated "target" attributes that allow for the kind of internal referencing required for the assertion model (i.e., @sourceLink to point to a source, @maintenanceeventLink to point to a maintenance event, and @conventionDeclarationLink to point to a convention declaration, etc.) to support specificity and greater capabilities for internal referencing. Consider adding @target for more generalized needs.